Beneficial Use Reconnaissance Program

2003 Annual Work Plan

For Wadeable (Small) Streams

Idaho Department of Environmental Quality

State Office of Technical Services
for DEQ Surface Water Program

2003

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2003 Annual Work Plan
For Wadeable (Small) Streams

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Abstract

In 1993, the Idaho Division (now Department) of Environmental Quality (DEQ) embarked on a pilot monitoring program, the Beneficial Use Reconnaissance Project (now Beneficial Use Reconnaissance Program [BURP]) aimed at integrating biological monitoring with physical habitat assessment to characterize stream integrity and the quality of Idaho's waters. The program has been implemented statewide since 1994. DEQ's past monitoring and assessment practices and the U.S. Environmental Protection Agency's rapid bioassessment protocols (RBPs) provided the foundation for BURP monitoring protocols. The purpose of BURP is to assist in determining the existing uses and beneficial use support status of Idaho's water bodies. The purposes of an annual BURP work plan are to provide background information about the program and list program objectives for a specific year. A companion to this work plan, the *Beneficial Use Reconnaissance Program Field Manual for Wadeable (Small) Streams* (Beneficial Use Reconnaissance Program Technical Advisory Committee *In preparation*), describes the methods used in BURP. Centralized crew training will be conducted in the Idaho Falls Regional Office area. Electrofishing and safety will be emphasized during the training. The objectives for BURP in 2003 are to: 1) establish and monitor long-term reference trend sites; 2) fill in missing data gaps; and 3) complete the stated pilot projects. Five pilot projects are scheduled for 2003 and these include four which will impact all regional offices: using level IV ecoregions, increasing the number of canopy cover measurements per site, development of an improved sample tracking system and an outside electrofishing training at our annual training session in May. In addition, the Coeur d'Alene Regional Office will use the surface water monitoring strategy in sampling the North Fork Coeur d'Alene River watershed. The work plan also lists a few innovations to water quality monitoring that BURP has provided over the years. The Boise, Coeur d'Alene, Idaho Falls, Lewiston, Pocatello, and Twin Falls DEQ Regional Offices will each have a sampling crew for the 2003 field season. There will be no DEQ State Office Variability Crew for 2003. The field season will begin July 1 and end September 30, 2003. Current forecasts are for streamflows in Idaho to be below normal for the 2003 field season. Each crew will sample approximately 50 stream sites. Current estimates are that DEQ will monitor around 400 BURP stream sites during the 2003 season.

Introduction

Regulatory Framework (Clean Water Act)

The history of the current regulatory framework for clean water programs in the United States began with the Water Pollution Control Act of 1948 (Public Law 80-845)(Water Environment Federation 1987). This was the first comprehensive statement of federal interest in clean water programs. In 1972, the U.S. Congress passed Public Law 92-500, the Federal Water Pollution Control Act, more commonly known as the Clean Water Act (CWA) (Water Environment Federation 1987). The goal of the act was to restore and maintain the chemical, physical, and biological integrity of the nation waters (Water Environment Federation 1987). One of the goals of the 1977 amendment was protecting and managing waters to insure swimmable and fishable conditions. This goal, along with the 1972 goal to restore and maintain chemical, physical, and biological integrity, relates water quality to more than just chemical characteristics. The CWA and the programs it generated have changed over the years as experience and perceptions of water quality have changed. The CWA has been amended 15 times, most significantly in 1977, 1981, and 1987.

The federal government, through the U.S. Environmental Protection Agency (EPA), assumed the dominant role in defining and directing water pollution control programs across the nation. The Department of Environmental Quality (DEQ) implements the CWA in Idaho while the EPA works with Idaho water quality programs and certifies the fulfillment of CWA requirements and responsibilities.

DEQ is charged (Clean Water Act, CFR, 39:3601) with providing consistent water body monitoring and assessment methods (Grafe et al. 2002). BURP procedures and DEQ monitoring protocols provide this consistency. The assessment methods (Grafe et al. 2002) determine if a water body is supporting or not supporting beneficial uses (see Table 1) such as aquatic life. The Idaho *Water Quality Standards and Wastewater Treatment Requirements* are the rules concerning beneficial uses and associated criteria (State of Idaho, Administrative Rules, 58.01.02). The Idaho water quality standards consist of three parts: 1) beneficial uses; 2) numeric and narrative criteria; and 3) antidegradation. Beneficial uses are described in more detail below.

History of the Beneficial Use Reconnaissance Program

In 1993, DEQ embarked on a pilot project known as the Beneficial Use Reconnaissance Project (now known as the Beneficial Use Reconnaissance Program) aimed at integrating biological monitoring with physical habitat assessment to characterize stream integrity and the quality of the water (McIntyre 1993). This project was also developed to meet the CWA requirements of monitoring and assessing biology and developing biocriteria. This pilot, named the Beneficial Use Reconnaissance Project (BURP), relied heavily on protocols for monitoring physical habitat and macroinvertebrates developed by Idaho State University and DEQ in the early 1990s. It closely followed the *Rapid Bioassessment Protocols for Use in Streams and Rivers: Benthic Macroinvertebrates and Fish* developed by EPA (Plafkin et al. 1989). Idaho's surface water quality monitoring is based on watersheds. The watersheds are grouped into hydrologic units, identified by hydrologic unit codes (HUCs) (Figure1).

This document was an attempt to use the best science and understanding available to characterize water quality based on biological communities and their attributes. Because of the success of the 1993 pilot, DEQ decided to expand the project statewide in 1994 (McIntyre 1994; Steed and Clark 1995). BURP has remained in use statewide since 1994 (Idaho Division of Environmental Quality 1995; Beneficial Use Reconnaissance Project Technical Advisory Committee 1996, 1997, 1998, 1999). BURP is the ambient monitoring strategy for the State of Idaho at this time. BURP monitoring was greatly reduced in 2000 in order to revise the monitoring and assessment documents and to begin assessment of collected data. Grafe et al. 2002 has created a final assessment document for the purpose of assessing these data. At the end of the 2000 BURP season a total of 4160 stream sites had been sampled in Idaho, making us a national leader in monitoring for bioassessment. Also in 2000, the *Beneficial Use Reconnaissance Project* was renamed the *Beneficial Use Reconnaissance Program* to emphasize its importance as a permanent DEQ monitoring program.

Overview of Rapid Bioassessment

Barbour et al. (1999) defines biological assessment as "an evaluation of the condition of a waterbody using biological surveys and other direct measurements of the resident biota in surface waters." The concept of "rapid bioassessment" resulted from a report by EPA, which suggested a restructuring of monitoring programs at that time (U.S. Environmental Protection Agency 1987). EPA's answer to this suggestion resulted in the first Rapid Bioassessment Protocols (RBPs) being published (Plafkin et al. 1989). RBPs were found to be faster, and thus cheaper, than previous monitoring techniques.

The RBPs have been used nationwide by a wide variety of federal agencies, most states and other monitoring entities and have improved over the years (Barbour et al. 1999). Idaho's BURP uses many of the RBP methods and makes modifications to fit Idaho's landscape and DEQ's objectives (Beneficial Use Reconnaissance Project Technical Advisory Committee 1999). A more detailed review of RBPs can be found in Idaho's 1998 303(d) list report (Idaho Division of Environmental Quality 1998).

Purposes of the BURP Annual Work Plans

The purposes of BURP's annual work plans are to provide background information about BURP and list yearly objectives. Annual work plans also help provide consistency within the program and serve as a substantial portion of BURP's quality assurance/quality control (QA/QC) program. The annual work plan will give the monitoring objectives for the year. The plan gives the priorities for the watersheds and streams to be sampled. Any pilot projects planned for the year are described as well as any other special considerations that may be unique to a given year. Clark (2001) provided the first work plan for BURP, which did not contain the actual field methods, used. The new companion to this work plan is the *Beneficial Use Reconnaissance Program Field Manual for Wadeable (Small) Streams* (Beneficial Use Reconnaissance Program Technical Advisory Committee 2002a), which describes the field methods used in detail.

Beneficial Uses of Water in Idaho

The beneficial uses of water in Idaho are defined as "any of the various uses of water, including, but not limited to, aquatic biota, recreation, water supply, wildlife habitat, and aesthetics" (Grafe et al. 2002). These beneficial uses are listed in Table 1. Since 1993, the purpose of BURP has been to establish existing uses and help determine the status of these beneficial uses (McIntyre 1993, 1994; Idaho Division of Environmental Quality 1995; Beneficial Use Reconnaissance Project Technical Advisory Committee 1996, 1997, 1998, 1999).

Table 1. The beneficial use categories of Idaho water as specified in the Idaho water quality standards (State of Idaho, Administrative Rules, 58.01.02).

Beneficial Use Category	Beneficial Uses
Aquatic Life Support	Cold Water Biota, Salmonid Spawning, Seasonal Cold Water Biota, Warm Water Biota, Modified
Contact Recreation	Primary (swimming), Secondary (boating)
Water Supply	Domestic, Agricultural, Industrial
Other	Wildlife Habitat, Aesthetics, Special Resource Waters

Beneficial Use Reconnaissance Program (BURP) Support Status

The purpose of BURP is to collect and measure key water quality variables that aid DEQ in determining the beneficial use support status of Idaho's water bodies. The determination will tell if a water body is in compliance with water quality standards and criteria and if the water is meeting reference conditions. Reference conditions are those that fully support applicable beneficial uses with little affect from human activity and represent the highest level of support attainable, by bioregion. BURP provides the data used in the *Water Body Assessment Guidance* (Grafe et al. 2002). For more details on how assessments are done, data representativeness and handling, as well as other policies, see Grafe et al. (2002).

Currently, DEQ recognizes three categories of beneficial use support status: fully supporting, not fully supporting, and not assessed. "Fully supporting" means that the water body is in compliance with water quality standards and criteria, and meeting the reference conditions for all designated and existing beneficial uses as determined through the *Water Body Assessment Guidance* (Grafe et al. 2002). Not fully supporting refers to a water body that is not in compliance with water quality standards or criteria, or not meeting reference conditions for each beneficial use as determined through the *Water Body Assessment Guidance* (Grafe et al. 2002). The "not assessed" category describes water bodies that have been monitored to some extent, but are missing critical information needed to complete an assessment. Not assessed can also mean that DEQ has not visited the water body and has no information on it.

Annual Work Plan, 2003 Field Season

Objectives

The objectives for BURP for the 2003 field season are:

1. Establish and monitor long-term reference trend sites,
2. Fill in missing data gaps, and
3. Complete the pilot projects listed below.

Several authors (Bahls et al. 1992; Grafe 1999; Harrelson et al. 1994; King 1993; McGuire 1992, 1995) have pointed out the need for long-term monitoring data of least-impacted (reference) sites. The purpose of long-term monitoring efforts is to help determine the range of natural variation within a water body (Barbour et al. 1999). For several years, BURP monitoring has placed emphasis on least-impacted (reference) conditions (McIntyre 1994; Idaho Division of Environmental Quality 1995; Beneficial Use Reconnaissance Project Technical Advisory Committee 1996, 1997, 1998, 1999).

DEQ is drafting a statewide monitoring strategy that may incorporate targeted, census, and probabilistic sampling as a means to describe water quality conditions in Idaho (Grafe 2002). This strategy will consider resources available to implement. This draft strategy will be released for public comment in July 2003.

The DEQ monitoring strategy will tie into the EPA development of a Consolidated Assessment and Listing Methodology (CALM) which has the purpose of improving state monitoring and assessment programs (U.S. Environmental Protection Agency 2001). Six major parts make up CALM: 1) making decisions on attainment/non-attainment of state water quality standards (covering listing/de-listing decisions); 2) designing comprehensive state monitoring networks that support attainment decisions; 3) reporting and presentation of data; 4) upgrading elements of state monitoring programs; 5) identifying causes and sources of impairment; and 6) addressing issues such as pathogens, nutrients, sedimentation, and fish advisories.

The overall goal of the CALM is to both strengthen and streamline the water quality monitoring, assessment and listing process for purposes of both sections 305(b) and 303(d) of the Clean Water Act. CALM will provide guidance on the monitoring data and assessment methods needed to support decision making, and on communicating water quality conditions to the public. The benefits of the CALM are, therefore, increased monitoring on all waters, improved decision making on water quality standards attainment and listing impaired waters, and clearer communication to the public on water quality issues in each state and across the nation (U.S. Environmental Protection Agency 2001).

Special Considerations for 2003 Field Season

It appears that this year will be another low water year for Idaho (Natural Resources Conservation Service 2003). The previous two out of three years have been low flow years in most of Idaho (Natural Resources Conservation Service 2001, Natural Resources Conservation Service 2002). Natural Resources Conservation Service. 2003. Idaho basin outlook report March 1, 2003. Natural Resources Conservation Service (2003) reports the following for streamflow for Idaho for the year 2003: "Streamflow forecasts decreased 5-15 percentage points from a month ago in the west-central, central, and basins south of the Snake River. The lowest forecasts are across southern Idaho from the Owyhee to the Bear River basing at 30%-35% of average. Streams forecasted in the 50-60% of average are Camas Creek, Blackfoot, Coeur d'Alene, St. Joe, Spokane and American Falls Inflow. Elsewhere, streams are forecast in the 65-86% of average range with the Salmon River forecast the highest in the state at 87%."

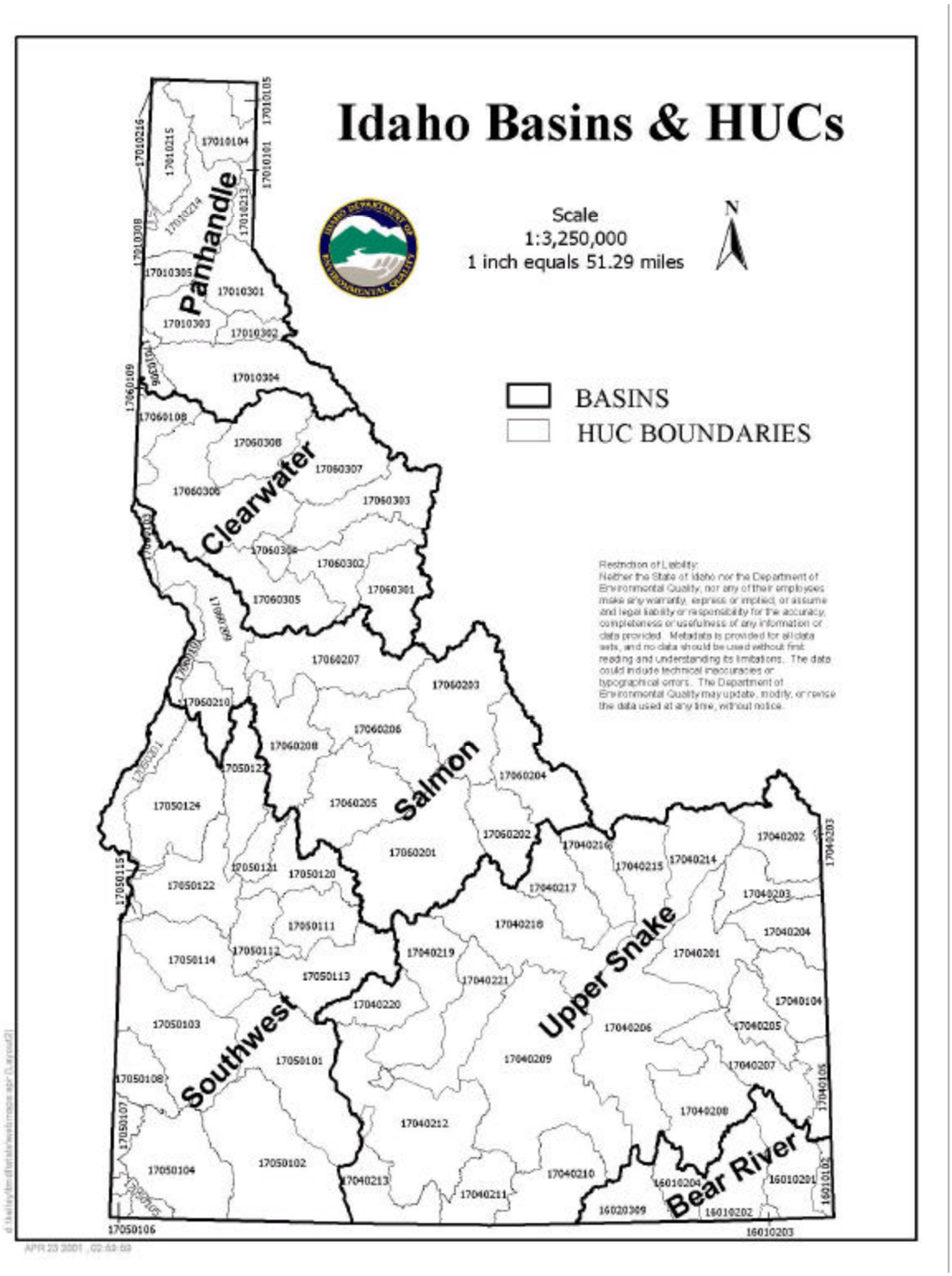

Figure 1. Major hydrologic basins and hydrologic unit codes (HUCs) in Idaho.

Streams and Stream Sample Sites

The Boise, Coeur d'Alene, Idaho Falls, Lewiston, Pocatello, and Twin Falls DEQ Regional Offices will each have a sampling crew for the 2003 field season. Contact information for the DEQ Regional Office BURP Coordinators is given in Figure 2. The previous DEQ Regional Office designations (for example NIRO) as well as the current DEQ Regional Office designations (CDA) are given for reference. Figure 2 also shows the approximate area of field operations for each office and coordinator. The field season will begin July 1 and end September 30.

Statewide approximately 400 sites will be monitored. The BURP sites will include 40 samples collected from reference sites (five sites in four bioregions). The core reference stations will be sampled on a regular basis to help establish a range of conditions and trends. Crews will typically sample lowland and rangeland areas earlier in the season and work upwards (increase elevation) toward forested streams to avoid problems encountered with early season runoff (snowmelt). The plan is to sample each stream at what are summer low flow conditions. A short narrative of what each DEQ Regional Office plans for the 2003 field season is given below. Table 2 contains a summary list of projected BURP sites and samples for the 2003 field season.

- Boise Regional Office – The Boise Regional Office will be sampling two areas of concern for the 2003 monitoring season: the North Fork Payette River, South Fork Payette River and the Snake River for a total of about 45 sites. Nine reference trend sites will be sampled in addition for a grand total of 54 sites. Electrofishing is planned on all of the 2003 sites.

- Coeur d'Alene Regional Office – The Coeur d'Alene Regional Office plans to concentrate in the St. Joe and Pend Oreille watersheds (25 sites total). Approximately 15 sites will be done in the North Fork Coeur d'Alene River watershed as part of the SWMS project (see more detailed discussion in the pilot project section below). This crew plans to sample four reference sites during the field season. The Coeur d'Alene Regional Office is conducting a cooperative project with the Coeur d'Alene Tribe in the Hangman Creek watershed which will result in an estimated four additional sites. It is estimated that approximately 60 bacteria samples will be taken. Electrofishing is planned on all sites during 2003. A total of approximately 50 sites will be sampled during 2003.

- Idaho Falls Regional Office – The Idaho Falls Regional Office plans to concentrate on ten major HUCs for the 2003 field season and will sample an estimated 100 sites. These include the Upper Salmon River (HUC #17060201); Pahsimeroi River (HUC #17060202); Panther Creek (HUC #17060203); Lemhi River (HUC #17060204); Upper Middle Fork (HUC #17060205); Yellowjacket-Middle Fork (HUC #17060206); Lower Salmon River (HUC #17060207), Willow Creek (HUC #17040205), Big Lost (HUC #17040218), and Birch Creek (HUC #17040216).

- Lewiston Regional Office (including the Grangeville Satellite Office) – The Grangeville Satellite Office will conduct the BURP sampling again this year for the Lewiston Regional Office. Plans are to concentrate in the Lower Salmon River tributaries, the Snake River tributaries, and the Little Salmon River tributaries. An estimated 50 sites will be sampled during 2003.

- Pocatello Regional Office – The Pocatello Regional Office plans to sample approximately 74 sites in eight HUCs, depending on dry sites (likely this year) and other intangibles: Salt River, HUC #17040105 (10); Bear Lake, HUC #16010201 (12); Middle Bear River, HUC #16010202 (10); Lower Bear-Malad, HUC #16010204 (12); Curlew Valley, HUC #16020309 (4); American Falls, HUC #17040206 (4); Blackfoot River, HUC #17040207 (7); and the Portneuf River, HUC #17040208 (15).

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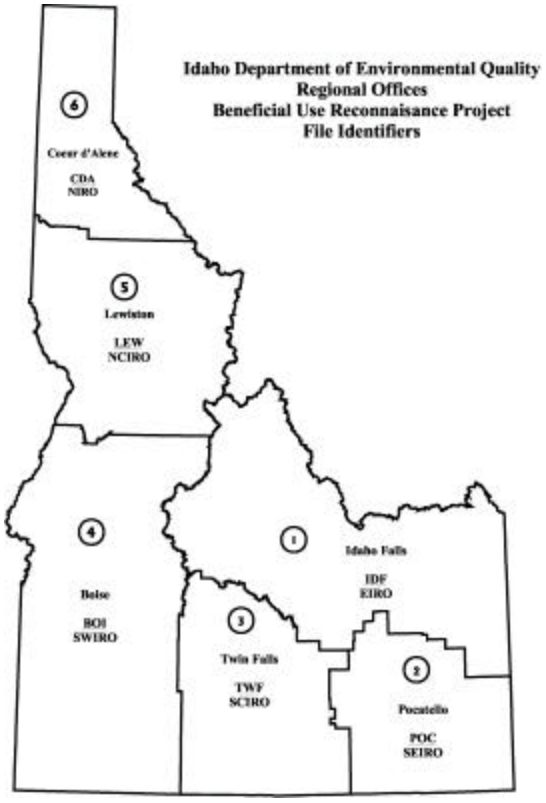

Figure 2. Beneficial Use Reconnaissance Program contacts for Idaho for 2003 and areas of responsibility.

Table 2. Estimated number of stream site watersheds to be monitored during the 2003 Beneficial Use Reconnaissance Program (BURP) field season.

Regional Office	Watersheds	Total # Sites	Estimated # Bacteria Samples	Estimated # Additional fish Sites
Boise	North Fork Payette R. South Fork Payette R. Snake River Reference Trend Total	 45 9 54	(Those sites determined necessary by the screening process, only estimates can be given) **50**	**0**
Coeur d'Alene	St. Joe River Pend Oreille River Hangman Creek N. Fk. Coeur d'Alene R. Reference Trend Total	13 12 4 15 4 48	**60**	**0**
Idaho Falls	Upper Salmon R. Pahsimeroi River Panther Creek Lemhi River Upper Middle Fk. Yellowjacket-MF Lower Salmon R. Willow Creek Birch Creek Big Lost River Total	10 10 20 10 10 5 5 20 5 5 100	**50**	**0**
Lewiston	Lower Salmon R. tribs Snake River tribs Little Salmon R. tribs Lolo Creek Reference Trend Total	 **50**	**40**	**5**
Pocatello	Salt River Bear Lake Middle Bear River Lower Bear-Malad Curlew Valley American Falls Blackfoot River Portneuf River Reference Trend Total	10 12 10 12 4 4 7 15 ?? 74	**50**	**0**
Twin Falls	Dry Creek Rock Creek McMullen Creek Trapper Creek Clover Creek Camas Creek Reference Trend Total	8 5 2 8 23 5 **?** 51	**50**	**0**
Totals for State	-----	**377**	**300**	**5**

- Twin Falls Regional Office – The work plan for the 2003 season in the Twin Falls region will focus on the following areas in two HUCs: Dry Creek drainage (HUC #17040212), six streams and eight sites; Rock Creek drainage (HUC #17040212), three streams and five sites; McMullen Creek drainage (HUC #17040212), two streams and two sites; Trapper Creek drainage (HUC #17040212), four streams and eight sites; Clover Creek drainage (HUC #17040212), 18 streams and 23 sites; and the Camas Creek drainage (HUC #17040212), five streams and stream sites. Sites will include perennial, intermittent, and ephemeral streams. Total number of estimated stream sites is 51.

Pilot Projects

Pilot projects are a way to try new methods and other ideas out on a trial basis and thus save resources until it is shown that the method should be integrated into BURP. The DEQ BURP Technical Advisory Committee is planning on conducting five pilot projects for the 2003 BURP field season. Most pilot projects will be done out of each regional office on a statewide basis, but the surface water monitoring strategy will be conducted in the Coeur d'Alene Regional Office only. The pilot projects scheduled for 2003 are listed below:

1. Level IV Ecoregions.

   Following McGrath et al. (2001), we will locate the BURP sites in Level IV ecoregions. The use of the new ecoregion categories should relate better to our work and provide more meaningful results. The BURP coordinators will receive training and maps on this new system. This will also be taught at our May and June training sessions.

2. Canopy Cover.

   In the past, canopy cover was one of the habitat variables that exhibited a wide range of variability for the stream habitat index (SHI). During the 2002 BURP field season, we doubled the canopy cover measurements (from three to six) on 10% of our BURP sites. Fore (2003) conducted an evaluation of our canopy cover variability data. She found that we can reduce the variability by 50% in our canopy cover estimates by taking six measurements rather than three. We will take six measurements (one at each three riffle transects, and one 10m above each riffle transect) for all sites during 2003.

3. Surface Water Monitoring Strategy

   The Coeur d'Alene Regional Office will conduct a SWMS (Grafe 2002) random site selection process within the North Fork Coeur d'Alene River watershed. Approximately 15 sites will be selected and monitored. The results of this will be reported back to the BURP coordinators for evaluation of the process.

4. Improved sample tracking system.

   The old BURP sample tracking system, which involved the use of packing slips and was not electronic will no longer be used. We are currently developing a comprehensive and electronic sample tracking system, which will track all samples from the time they are collected to the laboratory, and subsequent results are filed.

5. Electrofishing Training.

   In May 2003, at our "train-the-trainers" workshop in Twin Falls, we will include for the first time an outside electrofishing training. A representative from Smith-Root, Inc. will give the 2.5 day training, and certify those who pass the final test.

Program Innovations

1. TELEforms.

   The Cardiff ™ TELEform® system will be used for all BURP field forms. The TELEforms ® Allow for quick, easy, and accurate capture of data and subsequent conversion into digital format. The use of the TELEform® system will save time and resources and allow for fewer errors. This is an improvement in our QA/QC.

2. Centralized Training.

   We strive to improve our crew training on a continual basis. During June 2002, we conducted a pilot project on centralized crew training. Steve Robinson conducted the training in the Idaho Falls Regional Office. The BURP coordinators had met the previous May to decide on some of the training details. The centralized training insures that all the crews are trained the same way and hear the same instructions. This is probably the most significant improvement in BURP/QA/QC in recent years. Clark and Robinson (2002) noted that the group training was held for the first time during June. The 2002 field audit report was very favorable towards the field crews and reflects the success of the centralized training (Clark and Robinson 2002).

3. Regionalized Fish Keys.

   As an aid in field fish identification, Don Zaroban has developed a set of field keys for the BURP crews to use. A general key to the formulas of the commonly encountered fish in Idaho was prepared to be used statewide. Then separate keys were developed to cover the major parts of Idaho: Snake River drainages below Shoshone Falls, Snake River drainages above Shoshone Falls, and the Panhandle. These will facilitate the field identification of fish encountered in our surveys.

Other Monitoring Projects

The EPA is conducting a study in the western United States (EPA Regions 8, 9, and 10) that will advance the science of ecological monitoring and demonstrate techniques for regional-scale assessment of the condition of ecological systems. The objectives of this project, called Environmental Monitoring and Assessment Program (EMAP), the Western Pilot Study, are to "develop the monitoring tools (biological indicators, stream survey design, estimates of reference condition) necessary to produce unbiased estimates of the ecological condition of surfaces waters across a large geographic area (or areas) of the west; and demonstrate those tools in a large-scale assessment" et al. (2001). Unbiased estimates require either a complete census of the ecological resources through remote sensing or a rigorous probability survey design that allows extrapolation of results from the sample to the entire resource of interest. Both strategies are used in the EMAP Western Pilot Study: a census for land cover/land use and probability survey for other resources. The study will use a random or stratified random sampling scheme and a rich suite of indicators that include both biota and morphological aspects. See Tonning (1999) for a good overview of the Western Pilot Study. Hughes et al. (2000) provides a current overview of the survey in the United States.

Peck et al. (2001) provides a detailed field manual for the EMAP Western Pilot Study. The manual describes guidelines and standardized procedures for evaluating the biological integrity of surface waters of streams. The document contains the EMAP surface water field operations and bioassessment methods for evaluating the health and biological integrity of wadeable freshwater streams in the Western Pilot Study area.

Each western state participating in the study will sample approximately 50 sites over a four-year period. Idaho will sample about 15 sites per year under this program. The sampling will take place during July and August. Cynthia Grafe is the DEQ program contact and Mark Shumar is in charge of field monitoring for EMAP.

In addition, this year will begin the first of a four-year project called Regional Environmental Monitoring and Assessment Program (REMAP) (Peck et al. 2002), which will deal with larger water bodies in Idaho. Bill Clark will be in charge of the field monitoring for REMAP. The sampling will take place by raft during August and September. Approximately 20 sites will be sampled in the Northern Rockies Bioregion (Snake River Basin/High Desert and Northern Basin and Range ecoregions) in the northern part of Idaho.

Quality Assurance/Quality Control (QA/QC)

The quality assurance/quality control (QA/QC) aspects of BURP are critical to its success and have a direct relationship on the utility, repeatability, and defensibility of the data obtained by DEQ's sampling efforts. QA/QC are included in every aspect of BURP, including:

- preparing monitoring documents;
- educating and training BURP coordinators and crews (Beneficial Use Reconnaissance Program Technical Advisory Committee in preparation);
- electofishing training will be part of the coordinator's training for 2003;
- crew training is now centralized for consistency;
- preparing, calibrating, and maintaining field equipment;
- taking samples;
- conducting independent field audits, writing subsequent reports (Clark and Robinson 2002), and following up on issues raised in the audits;
- identification of biological (macroinvertebrate, fish, algae, amphibian) specimens;
- housing voucher specimens in a museum collection (Clark 2000); handling data; checking individual field sheets (Steed et al. 2002);
- entering, analyzing, and managing data (Radian International 1999); and
- writing reports; and all other aspects of using the data.

Safety Considerations

Safety will remain the priority for all BURP sampling conducted in 2003 and in the future. DEQ takes safety issues very seriously. Major safety aspects of the monitoring are discussed in the *BURP Field Manual for Wadeable (small) Streams* (Clark in preparation). The crews will also take appropriate measures to decontaminate waders, equipment, and vehicles so as to not transfer/introduce weed seeds, aquatic diseases, or other aquatic organisms from one water or watershed to another. In general, DEQ requires that all staff and crewmembers dealing with BURP receive first aid and CPR training or are hired with these current certifications. During May 2003, a representative of Smith-Root, Inc.® will train and certify each BURP coordinator in electrofishing use and safety. Electrofishing safety document is provided to each crew member (Smith-Root, Inc. 1998). DEQ requires that vehicles are stocked with emergency items, including a first aid kit, fire extinguisher, and other safety items. Safety issues concerning working around water and using sampling equipment are discussed in the BURP Field Manual (Clark in preparation), the BURP training manual (Beneficial Use Reconnaissance Program Technical Advisory Committee 2002), and in training classes. Each BURP crew is responsible for its own safety. DEQ will provide the tools and training necessary for crews to conduct their field work in a safe manner.

Acknowledgements

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Table 3. List of Acronyms

BURP	Beneficial Use Reconnaissance Program
CALM	Consolidated Assessment and Listing Methodology
CDA	Coeur d'Alene
CFR	Code of Federal Register
CPR	Cardiopulmonary Resuscitation
CWA	Clean Water Act, Federal
DEQ	Department of Environmental Quality, State of Idaho
EIRO	East Idaho Regional Office (now Idaho Falls Regional Office), DEQ
EMAP	Environmental Monitoring and Assessment Program
EPA	Environmental Protection Agency
HUC	Hydrologic Unit Codes
NCIRO	North Central Idaho Regional Office (now Lewiston Regional Office), DEQ
NIRO	North Idaho Regional Office (now Coeur d'Alene Regional Office), DEQ
QA/QC	Quality Assurance/Quality Control
RBP	Rapid Bioassessment Protocols
REMAP	River Environmental Monitoring and Assessment Program
SBA	Subbasin Assessment
SCIRO	South Central Idaho Regional Office (now Twin Falls Regional Office), DEQ
SEIRO	Southeast Idaho Regional Office (now Pocatello Regional Office), DEQ
SWIM	Surface water monitoring strategy
SWIRO	Southwest Idaho Regional Office (now Boise Regional Office), DEQ
TAC	Technical Advisory Committee
TMDL	Total Maximum Daily Load